

FISH COMMISSION OF OREGON  
TRAWL INVESTIGATION

Report of Cruise 67-4, Shrimp

Vessel: MV Sunrise

Dates: May 31-June 13, 1967

- Objectives:
1. To determine if pink shrimp (Pandalus jordani) would enter shrimp pots.
  2. To compare catch rates of day and night shrimp tows.
  3. To compare size, sex ratio, and age composition of shrimp caught during day and night tows.

Methods: Four shrimp pots constructed of plastic tubing and 1/2-inch stretch mesh netting were baited and fished at intervals for pink shrimp. Initially, all pots were fished on the bottom. One hundred fathoms of 1/2-inch polypropylene rope, an anchor, and buoy system were used to set and retrieve the pots. After initial testing, pots were suspended at 10, 20, and 30 fathoms from the bottom. All shrimp caught were sexed and measured.

The shrimp trawl was a 41-foot headrope Gulf semi-balloon trawl. We made 12 tows of which five were at night. The catch was sorted after each tow. Fish were either counted or weighed or both by species as time permitted. A one-half to one pound random shrimp sample was weighed, measured, and sexed.

Results: The shrimp pots were set and picked up 11 times. Six sets, ranging from 5 hours 35 minutes to 9 hours 10 minutes, were made during the day. No shrimp were caught. Five overnight sets, ranging from 10 hours 10 minutes to 16 hours 15 minutes, were made. A few shrimp were caught during each overnight set.

Both day and night sets were made with all pots on the bottom, two pots on the bottom and two suspended, and one pot on the bottom and three suspended. Pots on the bottom and suspended above the bottom both caught shrimp at night. Table 1 shows the location, bait, and catch for each set.

Pots were baited with one of the following: hake, Dover sole, rex sole, slender sole, shrimp, blackcod, arrowtooth halibut, or rockfish. Not enough testing was done to determine which of these might be best for attracting shrimp.

Day towing produced higher catch rates than night towing. Table 2 shows the results of the 6 day, 1 late evening, and 5 night tows. The shrimp per pound caught during the day ranged from 158 to 188. Night tows ranged in count from 138 to 154 shrimp per pound. The late evening tow had a count of 146 shrimp/pound. The per cent of males caught during the day ranged from 50% to 70%. Night tows had from 31% to 54% males. The late evening tow had 48% males.

These results suggest that most shrimp come off the bottom at night. It also appears that more of the males leave the bottom, resulting in a lower count.

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Table 1. Time, location, bait, and catch for shrimp pot trials  
May-June 1967

| Date | Time |      | Loran<br>(2H4) | Depth<br>(fms) | Shrimp<br>pot<br>no. | Distance of<br>shrimp pot<br>from bottom<br>(fms) 1/ | Bait        | Catch<br>(no. of<br>shrimp) |
|------|------|------|----------------|----------------|----------------------|--|-------------|-----------------------------|
|      | Set  | Pick |                |                |                      |  |             |                             |
| 5-31 | 1800 |      | 3292           | 66             | 1                    | on bottom  | hake        | 20                          |
| 6-1  |      | 1015 | "              | "              | 2                    | " "  | Dover       | 3                           |
|      |      |      |                |                | 3                    | " "  | rex-slender | 2                           |
|      |      |      |                |                | 4                    | " "  | shrimp      | 9                           |
| 6-1  | 1040 | 1530 | 3288           | 63-4           | 1                    | on bottom  | rex-slender | 0                           |
|      |      |      |                |                | 2                    | " "  | blackcod    | 0                           |
|      |      |      |                |                | 3                    | " "  | turbot      | 0                           |
|      |      |      |                |                | 4                    | " "  | rockfish    | 0                           |
| 6-1  | 1540 | 2000 | 3283           | 66             | 1                    | on bottom  | rex-slender | 0                           |
|      |      |      |                |                | 2                    | " "  | blackcod    | 0                           |
|      |      |      |                |                | 3                    | " "  | turbot      | 0                           |
|      |      |      |                |                | 4                    | " "  | rockfish    | 0                           |
| 6-1  | 2010 |      | 3279           | 67             | 1                    | on bottom  | none        | 0                           |
| 6-2  |      | 0620 | "              | "              | 2                    | " "  | hake        | 6                           |
|      |      |      |                |                | 3                    | " "  | turbot      | 6                           |
|      |      |      |                |                | 4                    | " "  | rex-slender | 2                           |
| 6-2  | 0630 | 1400 | 3276           | 67             | 1                    | on bottom  | none        | 0                           |
|      |      |      |                |                | 2                    | " "  | hake        | 0                           |
|      |      |      |                |                | 3                    | " "  | turbot      | 0                           |
|      |      |      |                |                | 4                    | " "  | rex-slender |                             |
| 6-10 | 1345 | 1920 | 3233           | 68             | 1                    | on bottom  | hake        | 0                           |
|      |      |      |                |                | 2                    | " "  | turbot      | 0                           |
|      |      |      |                |                | 3                    | 10   | hake        | 0                           |
|      |      |      |                |                | 4                    | 20   | rex         | 0                           |
| 6-10 | 1920 |      | 3230           | 67             | 1                    | on bottom  | hake        | 4                           |
| 6-11 |      | 0800 | "              | "              | 2                    | " "  | turbot      | 0                           |
|      |      |      |                |                | 3                    | 10   | hake        | 4                           |
|      |      |      |                |                | 4                    | 20   | rex         | 0                           |
| 6-11 | 0950 | 1900 | 3260           | 70             | 1                    | on bottom  | hake        | 0                           |
|      |      |      |                |                | 2                    | " "  | "           | 0                           |
|      |      |      |                |                | 3                    | 10   | "           | 0                           |
|      |      |      |                |                | 4                    | 20   | "           | 0                           |

Table 1. Time, location, bait, and catch for shrimp pot trials  
May-June 1967 (Continued)

| Date | Time |      | Loran<br>(2H4) | Depth<br>(fms) | Shrimp<br>pot<br>no. | Distance of<br>shrimp pot<br>from bottom<br>(fms) <sup>1/</sup> | Bait | Catch<br>(no. of<br>shrimp) |
|------|------|------|----------------|----------------|----------------------|---|------|-----------------------------|
|      | Set  | Pick |                |                |                      |   |      |                             |
| 6-11 | 1910 |      | 3260           | 70             | 1                    | on bottom   | hake | 0                           |
| 6-12 |      | 0900 | "              | "              | 2                    | 10  | "    | 1                           |
|      |      |      |                |                | 3                    | 20  | "    | 1                           |
|      |      |      |                |                | 4                    | 30  | "    | 1                           |
| 6-12 | 0900 | 1645 | 3258           | 70             | 1                    | on bottom   | hake | 0                           |
|      |      |      |                |                | 2                    | 10  | "    | 0                           |
|      |      |      |                |                | 3                    | 20  | "    | 0                           |
|      |      |      |                |                | 4                    | 30  | "    | 0                           |
| 6-12 | 1650 |      | 3249           | 72             | 1                    | on bottom   | hake | 3                           |
| 6-13 |      | 0730 | "              | "              | 2                    | 10  | "    | 1                           |
|      |      |      |                |                | 3                    | 20  | "    | 0                           |
|      |      |      |                |                | 4                    | 30  | "    | 1                           |

<sup>1/</sup> The distances above bottom are maximum since the line angle and currents caused the pots to fish closer to the bottom.

Table 2. Summary of shrimp day and night towing  
May-June 1967

| Tow<br>no. | Date | Time down (PST)     |       | Time net<br>on bottom<br>(min.) | Loran |      | Catch (lbs.) |       | Shrimp<br>per<br>pound |
|------------|------|---------------------|-------|---------------------------------|-------|------|--------------|-------|------------------------|
|            |      | Day                 | Night |                                 | Down  | Up   | Day          | Night |                        |
| 1          | 5-31 | 1630                |       | 16                              | 3288  | 3280 | 600          |       | 188                    |
| 2          | 5-31 |                     | 2300  | 15                              | 3285  | 3278 |              | 55    | 138                    |
| 3          | 6-1  | 1554                |       | 16                              | 3278  | 3270 | 700          |       | 187                    |
| 4          | 6-1  |                     | 2108  | 16                              | 3277  | 3270 |              | 51    | 153                    |
| 5          | 6-2  | 1115                |       | 16                              | 3270  | 3262 | 260          |       | 158                    |
| 6          | 6-10 | 1237                |       | 15                              | 3250  | 3245 | 550          |       | 171                    |
| 7          | 6-10 | 1931 (late evening) |       | 14                              | 3224  | 3219 | 330          |       | 146                    |
| 8          | 6-11 | 1444                |       | 16                              | 3254  | 3246 | 825          |       | 160                    |
| 9          | 6-11 |                     | 2119  | 15                              | 3252  | 3245 |              | 82    | 154                    |
| 10         | 6-12 |                     | 2324  | 14                              | 3252  | 3245 |              | 52    | 150                    |
| 11         | 6-12 |                     | 0159  | 15                              | 3252  | 3245 |              | 71    | 136                    |
| 12         | 6-13 | 0832                |       | 15                              | 3250  | 3241 | 600          |       | 164                    |